# EmCORE-a10R2

## 3.5" Compact Board
### Quick Installation Guide

Version 1.0

| Form Factor | CPU | Audio |
|---|---|---|
| ***3.5" Compact Board*** | ***Soldered onboard AMD R1102G APU Processor*** | ***Realtek ALC269 2.1 Channel HD Audio Codec, Mic-in/ Line-in/ Line-out*** |

| Video | LAN | I/O |
|---|---|---|
| ***Dual Channels 24-bit DisplayPort*** | ***2 x Realtek RTL8111 PCIe Gigabit Ethernet*** | ***SATA/ USB/ COM/ Mini-card/ DIO/ Micro SIM*** |

## ♦ Technical Support

If you have any technical difficulties, please consult the user's manual first at:
http://arbor-technology.com/

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.
http://arbor-technology.com/
E-mail: info@arbor.com.tw

FCC Class A
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



4042100200100P

## Packing List

Before you begin installing your Compact Board, please make sure that the following materials have been shipped:

1 x EmCORE-a10R2
AMD Ryzen R1000 R1102G Compact Board


1 x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

## Ordering Information

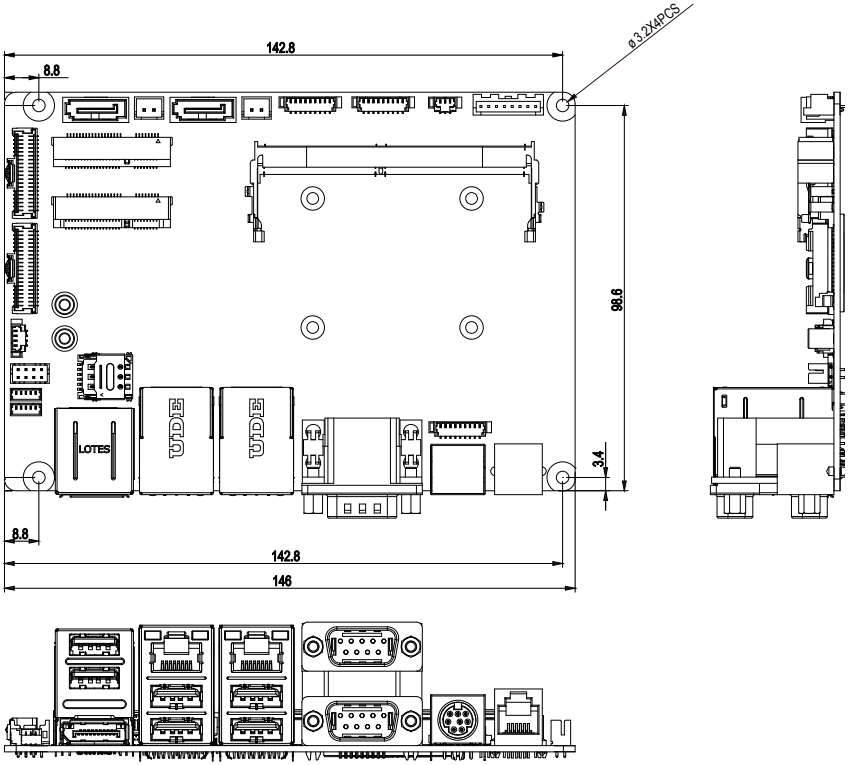
| | |
|---|---|
| EmCORE-a10R2-1102G | AMD Ryzen R1000 R1102G compact board |
| CBK-08-10R2-00 | Cable kit<br>2 x USB 2.0 cables (1 port/ cable)<br>3 x COM ports cables<br>1 x AUDIO cable<br>2 x SATA cable & power cables |

## Driver (7.7A) Installation

To install the drivers, please visit our website at **www.arbor-technology.com** and download the driver pack from the product page.

| Device | Driver Path |
|---|---|
| CHIPSET & VGA | \CHIPSET\19.50.23.01.200220a-352391C-AES |
| | \CHIPSET\AMD_Software_2.02.24.623 |
| AUDIO | \AUDIO\7982_PG453_Win10_TH_RS_Win8.1_Win8_Win7_WHQL |
| LAN | \LAN\Install_Win10_10025_03202018 |

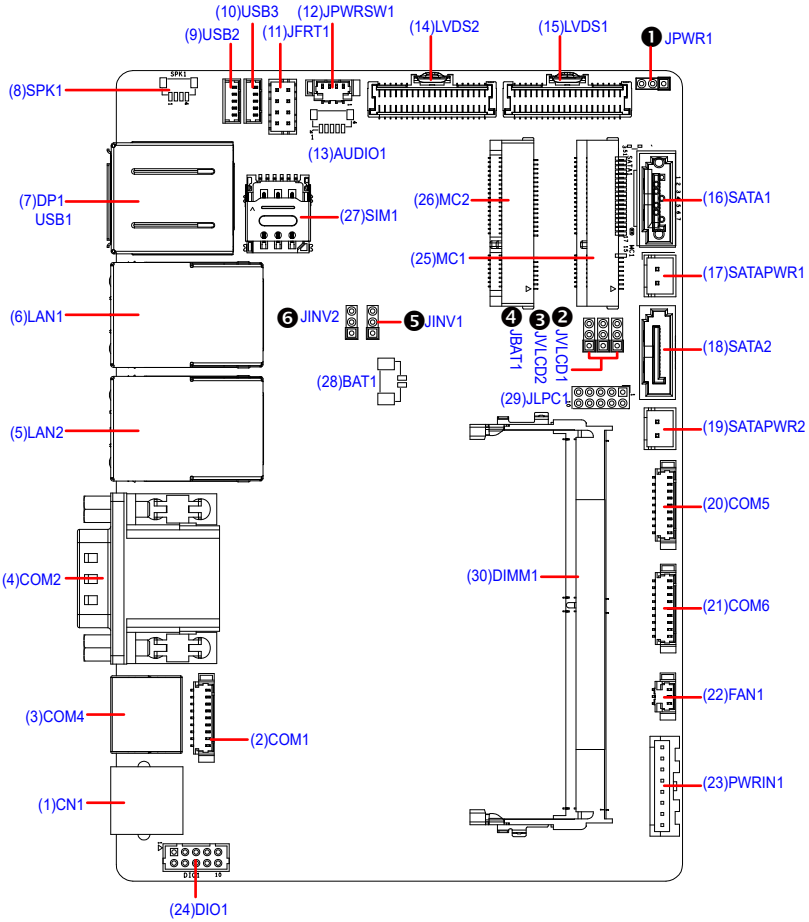
## Board Dimensions



## Specifications

| | |
|---|---|
| Form Factor | 3.5" Compact Board |
| CPU | Soldered onboard AMD Ryzen R1102G 1.2GHz (Base)/ 2.6GHz (Turbo) Processor |
| Memory | 1 x DDR4 SO-DIMM socket,<br>supporting 2400MHz SDRAM up to 16GB |
| BIOS | AMI UEFI BIOS |
| Watchdog Timer | 1~255 levels reset |
| Super I/O | Fintek F81866 |
| USB Port | 2 x USB 3.0/2.0 ports<br>6 x USB 2.0 ports |
| Serial Port | 6 x COM ports |
| Expansion | 2 x Mini-Card Sockets (1 x Full size, 1 x Half size) |
| | 1 x Micro SIM socket (for Full size Mini-card) |
| Storage | 2 x Serial ATA ports with 600MB/s HDD transfer rate |
| Ethernet Chipset | 2 x Realtek RTL8111 PCIe GbE controllers |
| Digital I/O | 8-bit Programmable |
| Audio | Realtek® ALC269 2.1 Channel HD Audio CODEC,<br>MIC-in/ Line-in/ Line-out |
| Graphic Chipset | Integrated Vega Core Graphics controller |
| Graphic Interface | 2 x Dual Channel 24-bit LVDS |
| | 1 x DisplayPort |
| | Total display: choose two from three |
| Power Requirement | +8V - 13.2V DC-In |
| Power Consumption | 1.53A@12V (Typical) |
| Operating Temp. | -20 ~ 70°C (-4 ~ 158ºF) |
| Operating Humidity | 10 ~ 95% @ 70°C (non-condensing) |
| Dimensions (L x W) | 146 x 102 mm (5.7" x 4.0") |

# Jumpers and Connectors Location on Top side



# Jumpers & Connectors Quick Reference

## Jumpers

| Jumper | Description |
|---|---|
| ❶JPWR1 | AT/ATX Power Mode Selection |
| ❷❸JVLCD1, 2 | LVDS1, 2 LCD Voltage Selection |
| ❹JBAT1 | CMOS Setting |
| ❺❻JINV1, 2 | LVDS1, 2 LCD Inverter Voltage Selection |

## Connectors

| Connector | Description |
|---|---|
| (1)CN1 | DREWR Connector |
| (2)COM1 | RS-232 Serial Port Connector |
| (3)COM4 | Serial Port Connector |
| (4)COM2 | RS-232 Serial Port Connectors |
| (5)(6)LAN2, 1 | RJ-45 LAN and USB 2.0 Stack Connectors |
| (7)DP1 & USB1 | USB 3.0 Stack Connectors and DisplayPort |
| (8)SPK1 | 2Watt (rms)/4Ω per Channel Speaker Output Connector |
| (9)(10)USB2, 3 | USB Hub |
| (11)JFRT1 | Switches and Indicators |
| (12)JPWRSW1 | Power Switches and LED |
| (13)AUDIO1 | MIC,LINE Audio Connector |
| (14)(15) LVDS2, 1 | LVDS Connector |
| (16)(18)SATA1, 2 | SATA Connector Channel 0, 1 |
| (17)(19)SATAPWR1, 2 | SATA Power Connector |
| (20)(21)COM5,6 | RS-232 Serial Port Connector |
| (22)FAN1 | Smart Fan Connector |
| (23)PWRIN1 | DC +12V Power Input Connector |
| (24)DIO1 | Digital I/O Connector |
| (25)MC1 | Full size Mini-Card Socket |
| (26)MC2 | Half size Mini-Card |
| (27)SIM1 | MC1 NANO SIM Socket |
| (28)BAT1 | Battery Connector |
| (29)JLPC1 | LPC to 80 Port Debug Card Connector |
| (30)DIMM1 | DDR4 SO-DIMM Socket |

## Jumpers

### ❶JPWR1: AT/ATX Power Mode Selection

Connector type: 2.00mm pitch 1x3 pin header

| Pin | Power Mode Selection | |
|---|---|---|
| 1-2 | ATX Mode (Default) |  |
| 2-3 | AT Mode |  |

### ❷❸JVLCD1, 2: LVDS1, 2 LCD Voltage Selection

The voltage of LVDS1, 2 LCD panel could be selected by JVLCD1 in +5V or +3.3V.

Connector type: 2.00mm pitch 1x3 pin header

| Pin | Voltage | |
|---|---|---|
| 1-2 | +5V |  |
| 2-3 | +3.3V (Default) |  |

### ❹JBAT1: CMOS Setting

Connector type: 2.00mm pitch 1x3-pin header

| Pin | Mode | |
|---|---|---|
| 1-2 | Keep CMOS (Default) |  |
| 2-3 | Clear CMOS |  |

### ❺❻JINV1, 2: LVDS1, 2 LCD Inverter Voltage Selection

The voltage of LVDS1, 2 LCD panel inverter could be selected by JINV1, 2 in 12V or +5V.

Connector type: 2.00mm pitch 1×3 pin header

| Pin | Voltage | |
|---|---|---|
| 1-2 | +12V (default) |  |
| 2-3 | +5V |  |

## Connectors

### (1)CN1: DREWR Connecter

Connector type: RJ-11 Connector

| Pin | Description |
|---|---|
| 1 | FRAME GND |
| 2 | DRWER1 |
| 3 | SW_IN |
| 4 | 24V |
| 5 | DRWER2 |
| 6 | GND |

### (2)COM1: RS-232 Serial Port Connector

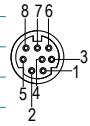
Connector type: 1.25mm pitch 1x9-pin wafer connector

| Pin | Description |
|---|---|
| 1 | DCD |
| 2 | RX |
| 3 | TX |
| 4 | DTR |
| 5 | GND |
| 6 | no connection |
| 7 | RTS |
| 8 | CTS |
| 9 | +5V/RI (JRS1 Switchable) |

### (3)COM4: Serial Port Connector

Connector type: 8-Pin mini DIN connector

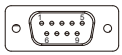
| Pin | Description |
|---|---|
| 1 | CTS |
| 2 | RTS |
| 3 | RXD |
| 4 | GND |
| 5 | TXD |
| 6 | DSR |
| 7 | DTR |
| 8 | +V5S |



## (4)COM2: RS-232 Serial Port Connector

Connector type: External 9-pin D-sub male connector.

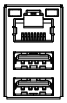
| Pin | Desc. | Pin | Desc. |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RX | 7 | RTS |
| 3 | TX | 8 | CTS |
| 4 | DTR | 9 | +5V |
| 5 | GND | | |



## (5)(6)LAN2, 1: RJ-45 LAN and USB 2.0 Stack Connectors

Connector type: RJ-45 LAN and double-stacked USB connectors

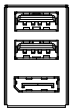
The pin assignments conform to the industry standard.



## (7)DP1 & USB1: USB 3.0 Stack Connectors and DisplayPort

Connector type: Double-stacked USB connectors and DisplayPort

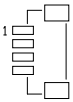
The pin assignments conform to the industry standard.



## (8)SPK1: 2Watt (rms)/4Ω per Channel Speaker Output Connector

Connector type: 1.25mm pitch 1x4 pin header

| Pin | Description |
|---|---|
| 1 | SP_R- |
| 2 | SP_R+ |
| 3 | SP_L- |
| 4 | SP_L+ |




## (9)(10)USB2, 3: USB Hub Connector

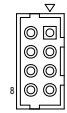
Connector type: 1.25mm pitch 1x5 pin header

| Pin | Description |
|---|---|
| 1 | USB_+5V |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |
| 5 | GND |


## (11)JFRT1: Switches and Indicators

Connector type: 2.00mm pitch 2x4 pin wafer connector

| Pin | Desc. | Pin | Desc. |
|---|---|---|---|
| 2 | POWER_ LED- | 1 | POWER_ LED+ |
| 4 | HDD_LED- | 3 | HDD_LED+ |
| 6 | 12V_- | 5 | 12V_+ |
| 8 | RESET- | 7 | RESET+ |




## (12)JPWRSW1: Power Switches and LED

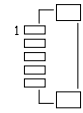
Connector type: 1.25mm pitch 1x4 pin wafer connector

| Pin | Description |
|---|---|
| 1 | PSON+ |
| 2 | PSON- |
| 3 | POWER_LED2+ |
| 4 | POWER_LED2- |


## (13)AUDIO1: MIC,LINE Audio connector

Connector type: 1.25mm pitch 1x5 pin connector

| Pin | Description |
|---|---|
| 1 | MIC |
| 2 | GND |
| 3 | LINE IN L |
| 4 | LINE IN R |
| 5 | GND |



## (14)(15) LVDS2, 1: LVDS Connector

Connector type: 1.25mm pitch 2x20 pin connector, supporting 24-bit dual channels

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | LCD_ VDD(+3.3V/+5V) | 2 | LCD_ VDD(+3.3V/+5V) |
| 3 | GND | 4 | LCD_ VDD(+3.3V/+5V) |
| 5 | LVDS_DA0- | 6 | LVDS_DB0- |
| 7 | LVDS_DA0+ | 8 | LVDS_DB0+ |
| 9 | GND | 10 | GND |
| 11 | LVDS_DA1- | 12 | LVDS_DB1- |
| 13 | LVDS_DA1+ | 14 | LVDS_DB1+ |
| 15 | GND | 16 | GND |
| 17 | LVDS_DA2- | 18 | LVDS_DB2- |
| 19 | LVDS_DA2+ | 20 | LVDS_DB2+ |
| 21 | GND | 22 | GND |
| 23 | LVDS_A_CLK- | 24 | LVDS_B_CLK- |
| 25 | LVDS_A_CLK+ | 26 | LVDS_B_CLK+ |
| 27 | GND | 28 | GND |
| 29 | LVDS_DA3- | 30 | LVDS_DB3- |
| 31 | LVDS_DA3+ | 32 | LVDS_DB3+ |
| 33 | GND | 34 | BKL_CONTROL |
| 35 | USB+ (USB2.0 PORT4) | 36 | BKL_ENABLE |
| 37 | USB-(USB2.0 PORT4) | 38 | GND |
| 39 | USB_+5V | 40 | BKL_ PWR(+5V/+12V) |


## (16)(18)SATA1, 2: SATA Connector Channel 0, 1

Connector type: SATA Connector

The pin assignments conform to the industry standard.


## (17)(19)SATAPWR1, 2: SATA Power Connector

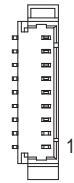
Connector type: 2.00mm pitch 1x2-pin wafer connector

| Pin | Description |
|---|---|
| 1 | +5VS |
| 2 | GND |


## (20)(21)COM5,6: RS-232 Serial Port Connector

Connector type: 1.25mm pitch 1x9-pin wafer connector

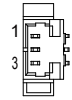
| Pin | Description |
|---|---|
| 1 | DCD |
| 2 | RX |
| 3 | TX |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | COM5: RI / COM6: +V5S |




## (22)FAN1: Smart Fan Connector

Connector type: 1.25mm pitch 1x3-pin wafer connector

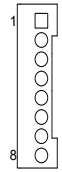
| Pin | Description |
|---|---|
| 1 | GND |
| 2 | VCC |
| 3 | RPM |



## (23)PWRIN1: DC +12V Power Input Connector

Connector type: 2.5mm pitch 1x8 pin header

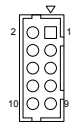
| Pin | Description |
|---|---|
| 1 | VIN: 8V~13.2V |
| 2 | VIN: 8V~13.2V |
| 3 | GND |
| 4 | GND |
| 5 | +5V LED |
| 6 | COM1 DSR |
| 7 | GND |
| 8 | VIN:+24V |




## (24)DIO1: Digital I/O Connector

Connector type: 2.00mm pitch 2x5 pin wafer connector

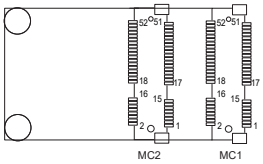
| Pin | Desc. | Pin | Desc. |
|---|---|---|---|
| 2 | DIO1 | 1 | DIO0 |
| 4 | DIO3 | 3 | DIO2 |
| 6 | DIO5 | 5 | DIO4 |
| 8 | DIO7 | 7 | DIO6 |
| 10 | GND | 9 | V5S+ |




## (25)MC1: Full size Mini-Card Socket
## (26)MC2: Half size Mini-Card Socket

Connector type: Onboard 0.8mm-pitch 52-pin edge card connector

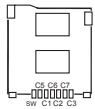
The pin assignments conform to the industry standard.




## (27)SIM1: MC1 NANO SIM Socket

Connector type: SMD,6P,1.27mm, H1.5 socket

| Pin | Desc. | Pin | Desc. |
|---|---|---|---|
| C1 | VCC | C2 | RST |
| C3 | CLK | C5 | GND |
| C6 | VPP | C7 | I/O |




## (28)BAT1: Battery Connector

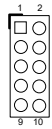
Connector type: 1.25mm pitch 1x2-pin connector.

| Pin | Description |
|---|---|
| 1 | RTCBAT |
| 2 | GND |


## (29)JLPC1: LPC to 80 Port Debug Card Connector

Connector type: 1.25mm pitch 2x5 pin header

| Pin | Desc. | Pin | Desc. |
|---|---|---|---|
| 1 | LPC_CLK0 | 2 | GND |
| 3 | LPC_ LFRAME# | 4 | 3.3V_LPC_ LAD0 |
| 5 | PLTRST# | 6 | N/C |
| 7 | LPC_LAD3 | 8 | LPC_LAD2 |
| 9 | +3.3VS | 10 | LPC_LAD1 |




## (30)DIMM1: DDR4 SO-DIMM Socket

Connector type: DDR4 SO-DIMM socket supporting 2400MHz SDRAM up to 16GB